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August 26, 2013

VIA ELECTRONIC DELIVERY

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Room TWA325
Washington, DC 20554

Re: Notice of *Ex Parte* Communication
WT Docket No. 11-79

Dear Ms. Dortch:

CSX Transportation, Inc. ("CSX") hereby submits the attached slides that were presented on August 22, 2013 during a background briefing session on positive train control for FCC staff at the Halethorpe, Maryland Dispatch Center. CSX representatives included Henry McCreary, Harold Guess, Floyd Mobley, Paul Green, Bill Keough, and I, and the Commission representatives were Jane Jackson, Brian Regan, and Richard Arsenault from the Wireless Telecommunications Bureau and Stephanie Weiner from the Office of the General Counsel.

Pursuant to Section 1.1206(b) of the Commission's rules, I am filing this notice electronically in the above-referenced dockets. Please contact me directly with any questions.

Respectfully submitted,

/s/ Michele C. Farquhar

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Brian Regan
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How tomorrow moves

PTC Overview For FCC Staff

August 22, 2013 – Halethorpe, Md. Dispatch Center Tour

Agenda

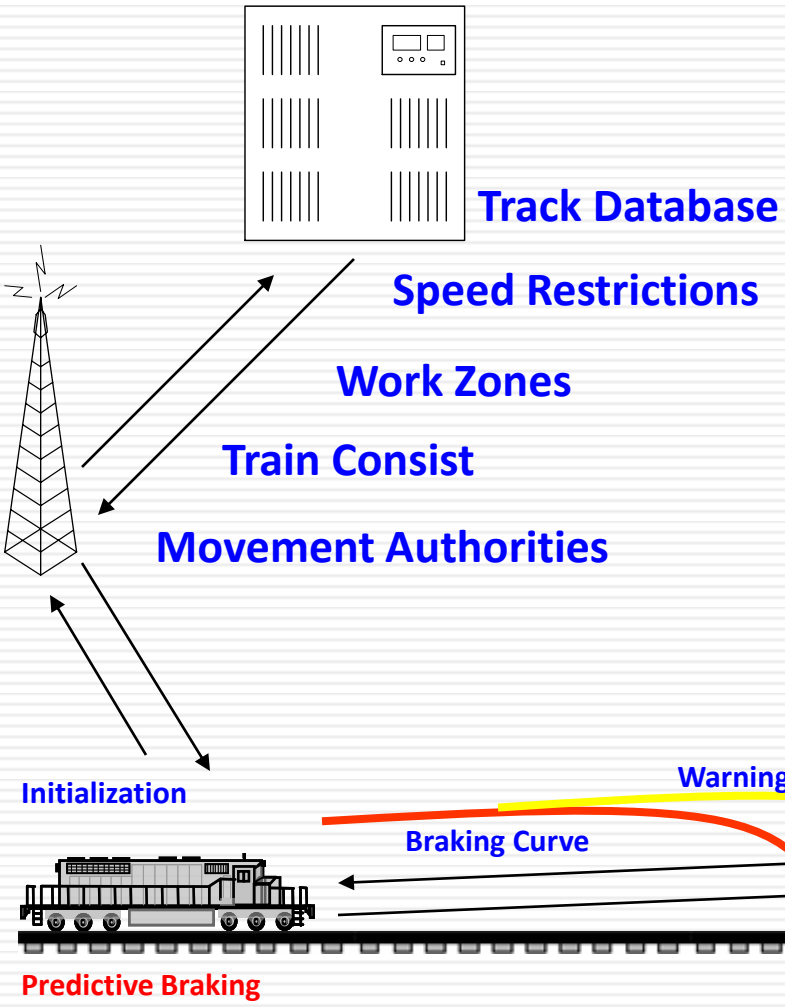
- Regulatory Requirements
- PTC System Overview
- Scale of PTC at CSX
- PTC Interoperable Communications
- 220 Radio Architecture
- Questions

PTC legislation requires specific functionality

- PTC gauges upcoming signals, authorities, switches, operating conditions, locomotive position & speed
- PTC designed to warn engineer of need for action
- If the engineer fails to act, PTC system will engage locomotive brakes and bring train to full stop

If railroaders do their jobs correctly, PTC should never engage the brakes

PTC System Overview

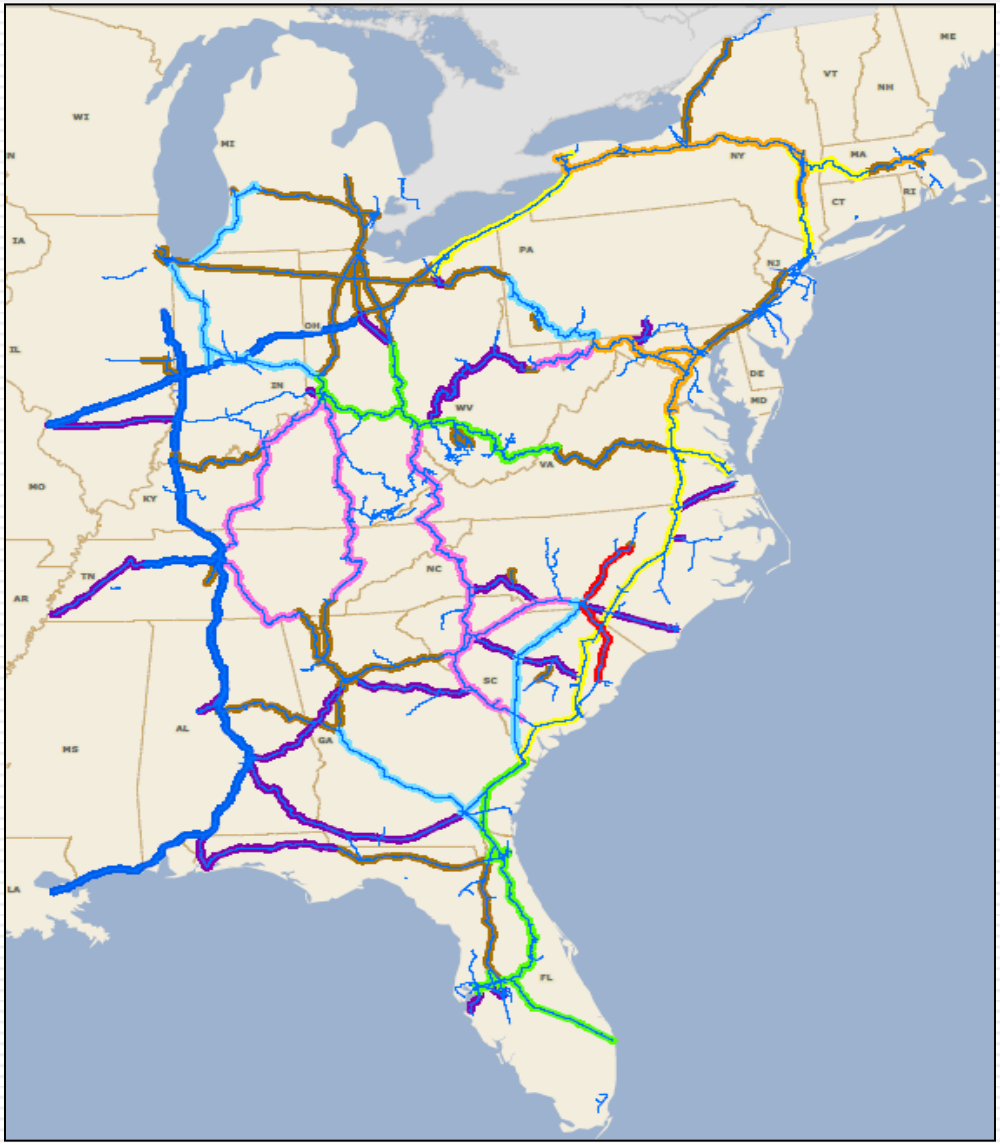


- Speed Restrictions
- Switches
- Work Zones
- Signals

- Scale of PTC at CSX

PTC is required on 76% of the CSX Network

- PTC required on:
  - passenger routes
  - lines with one or more PIH cars and traffic greater than 5 MGT annually
- PTC Footprint
  - 3,600 locomotives
  - 10,300 wayside devices
  - 5300 wayside comms locations
  - 1285 220Mhz base stations
  - 16,300 track miles
- Pending amendments to the final rule may decrease footprint mileage



Required industry interoperability

Class I Railroads

BNSF Railway

CN

Canadian Pacific

CSX — How tomorrow moves

Kansas City Southern Lines

Norfolk Southern

Union Pacific

Passenger Railroads

Amtrak

Massachusetts Bay Transportation Authority

MARC

Metropolitan Transportation Authority

Metra — The way to really fly.

NJ TRANSIT

SEPTA

TRI-RAIL

VRE

- Interoperability requirement applies to Class I and passenger railroads
- Class Is agreed to develop standard platform
- PTC must be able to recognize and stop non-CSXT locomotives

The CSXT road fleet has over 20 classes of locomotives . . .

. . . and each class has a different configuration

PTC Display

Antenna “Bar”

PTC in Electrical Cabinet

Locomotive installs must be tailored to individual classes of power

Wayside installs must be tailored to existing plant . . .

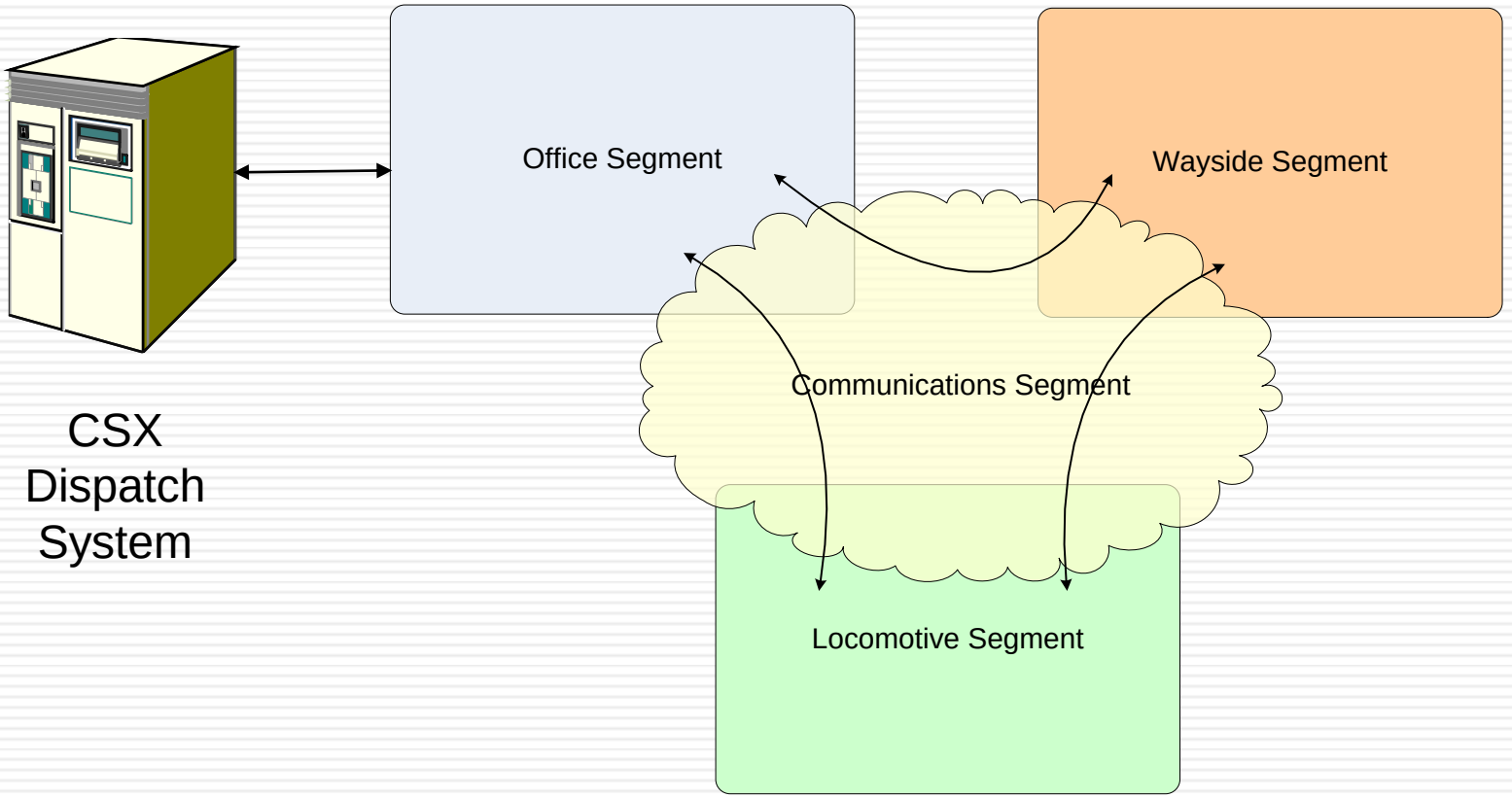
. . . including some very old equipment

CSX anticipates 1285 220Mhz Base Stations

300 Sites – Re-Use Existing pole
700 Sites - Replace Wood w/Tilt Down
285 Sites - New House & Tilt Down

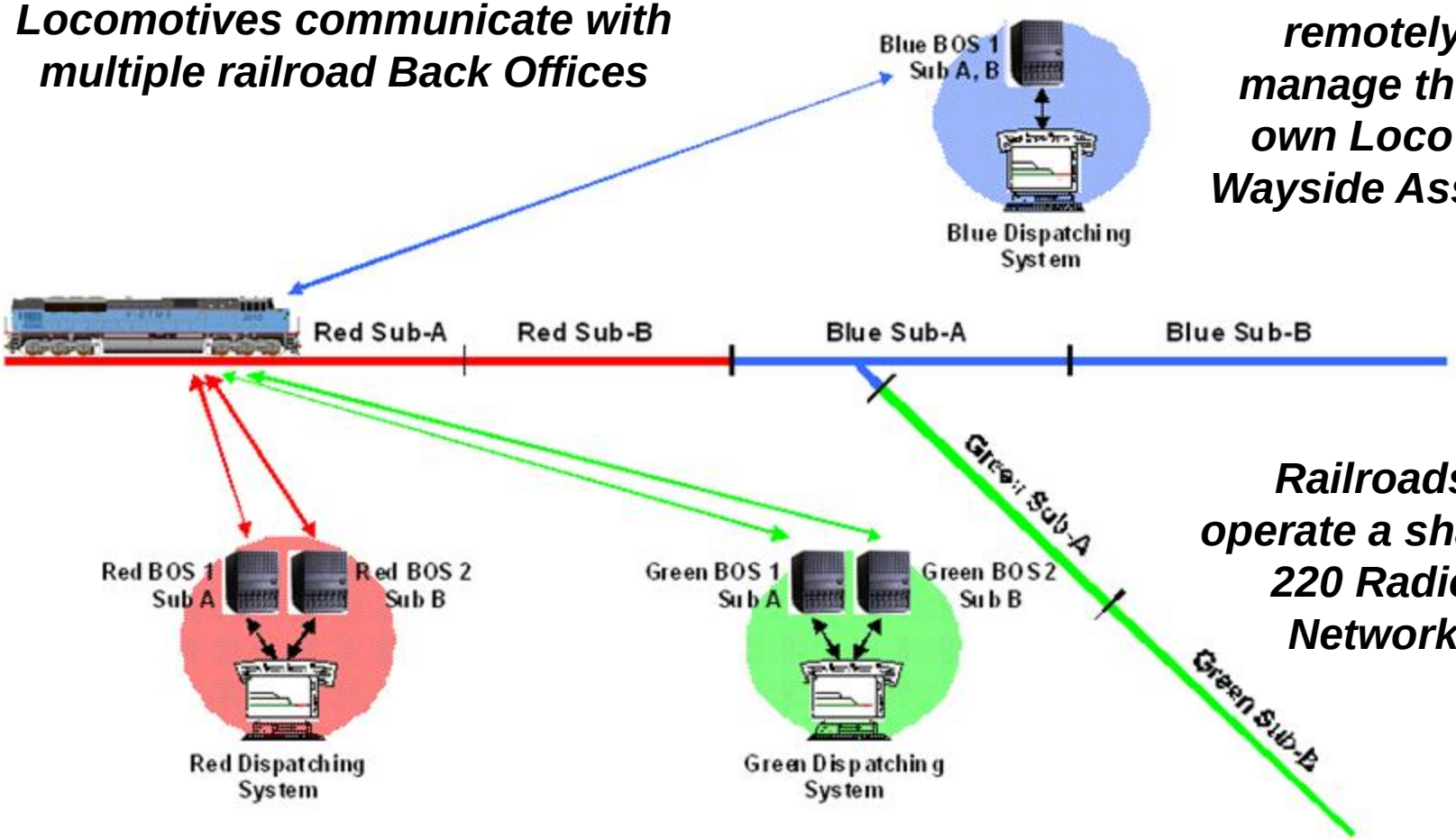
PTC Interoperable Communications

PTC Segments



PTC Interoperable Communications

Locomotives communicate with multiple railroad Back Offices

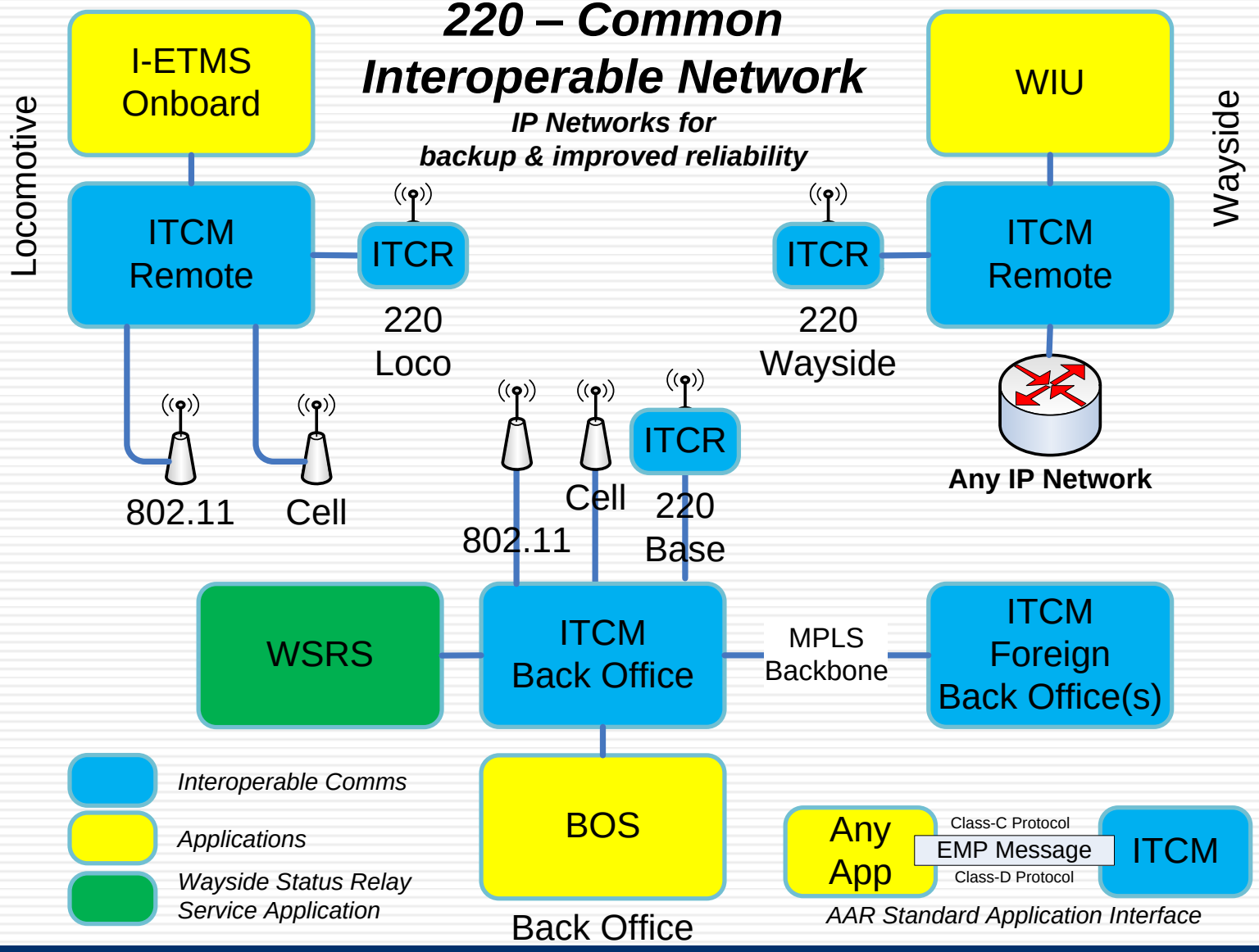


Railroads remotely manage their own Loco & Wayside Assets

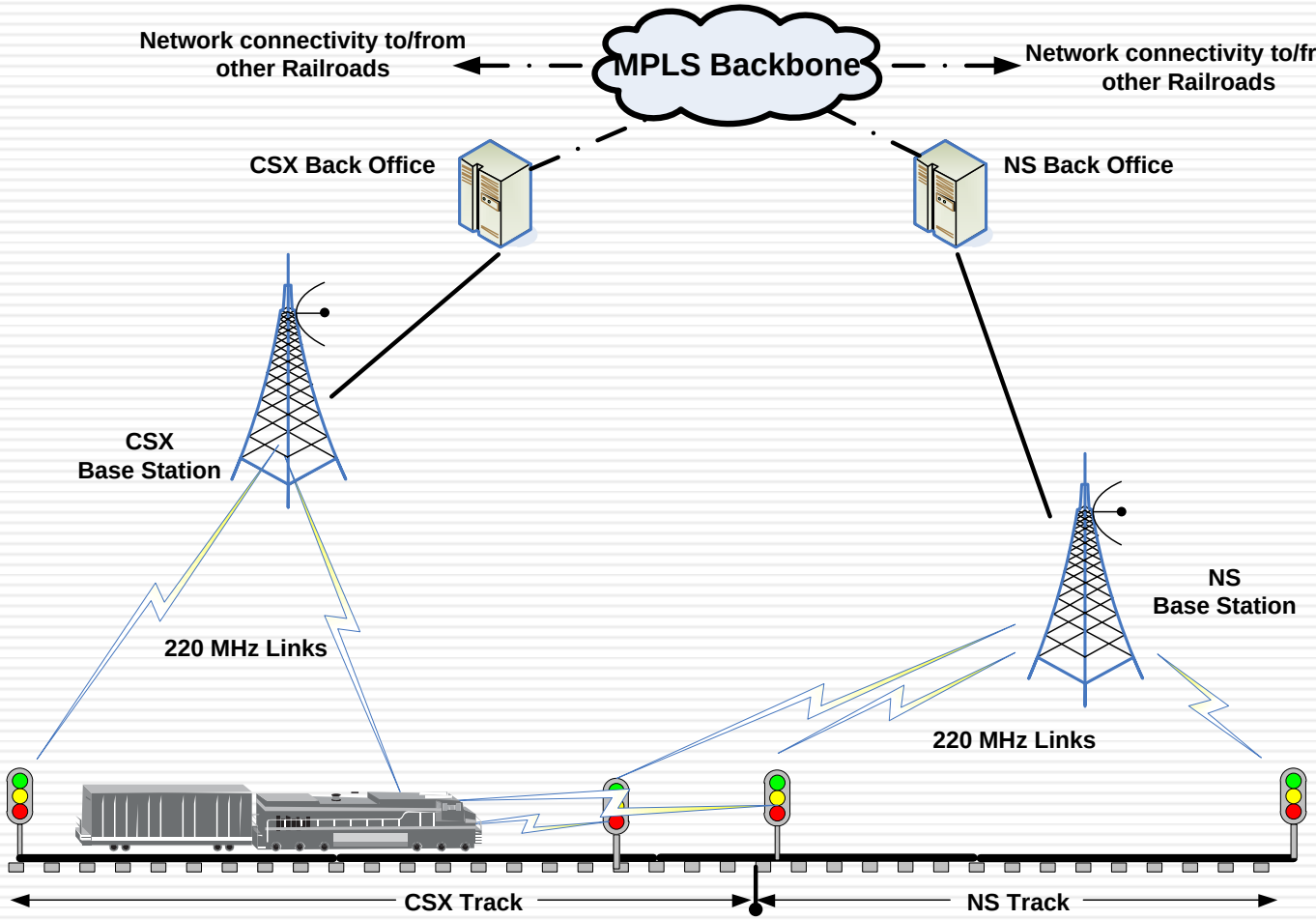
Railroads operate a shared 220 Radio Network

Locomotives communicate with multiple railroad Waysides

ITC Communications Network Building Blocks



PTC Interoperable Communications



Common Wireless Network - 220 MHz Radio

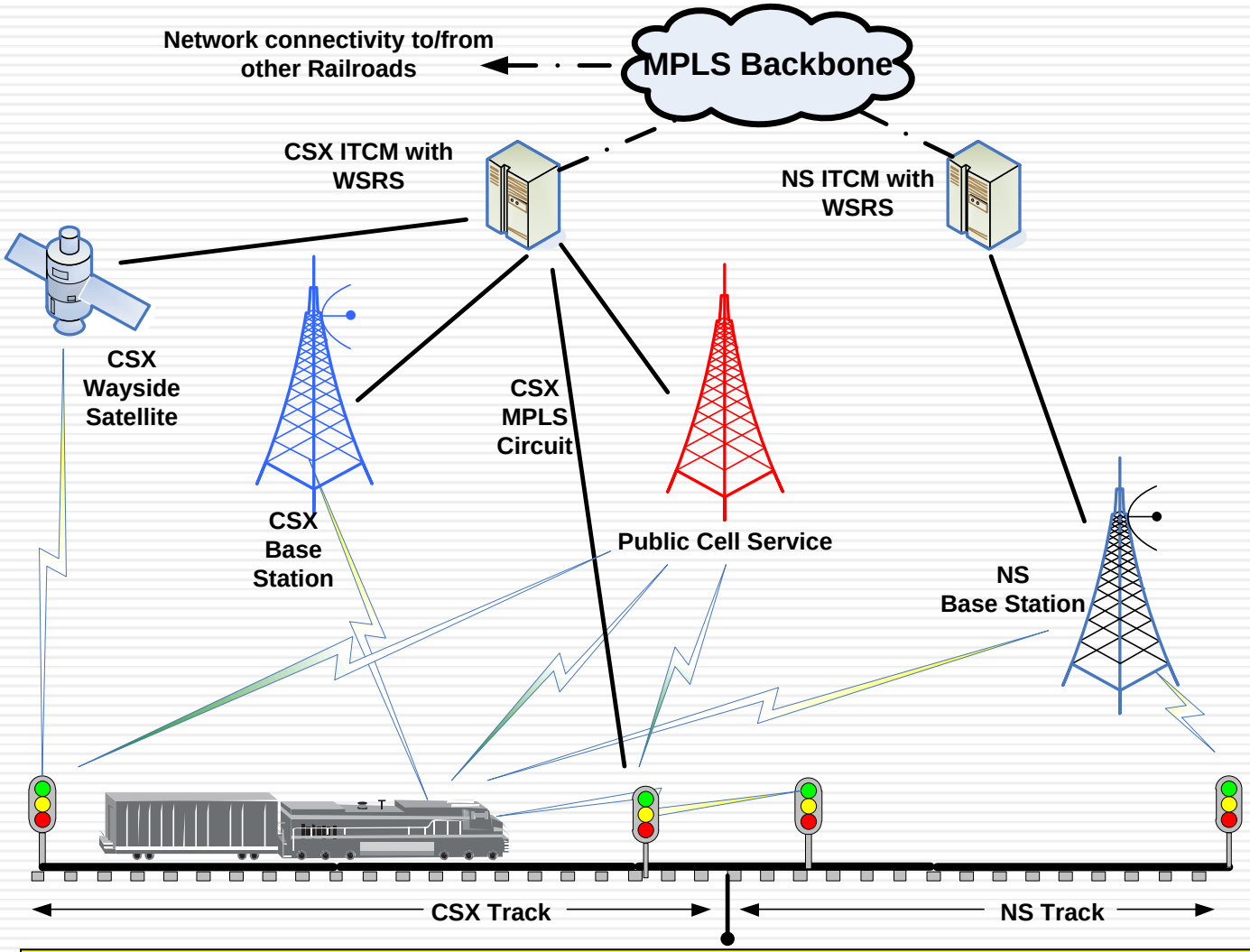
MPLS Backbone - All ITC PTC Railroads connect thru back-office

Base Station Sharing - CSX Trains may use an NS 220 Base

Common Message Routing – ITCM Messaging System

All railroads deploying the ITC PTC System implement this Interoperable Network

CSX leverages both 220 & Wireless IP



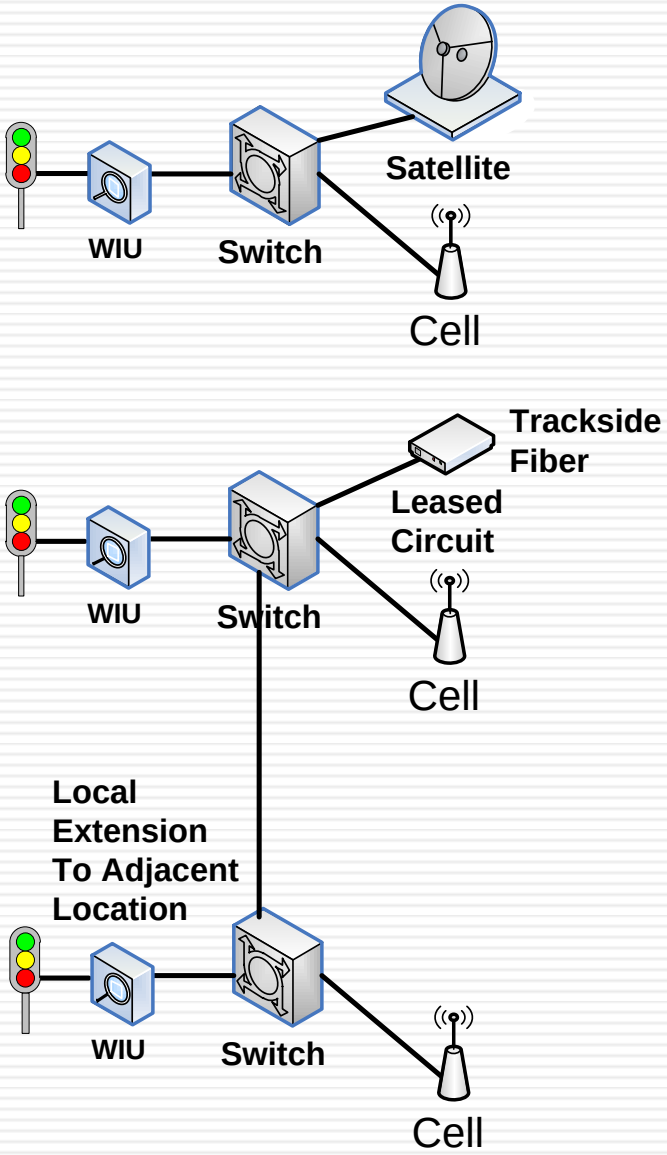
Locomotive Dual Carrier Cell Modems - reduces PTC initialization time and acts as a backup to the 220 radio

Two IP circuits to CSX Wayside – various combinations of Leased circuits, Cell, and Satellite

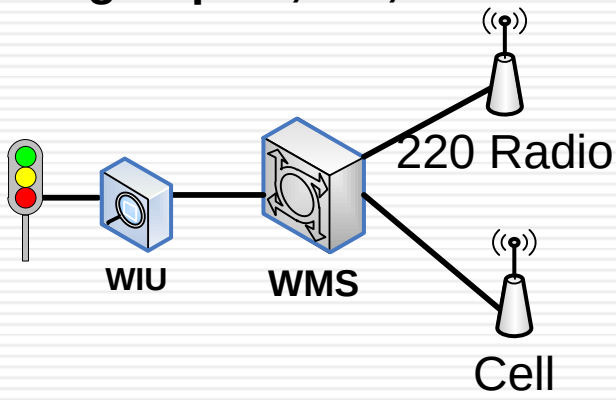
Base Stations -Relay Wayside Beacons to the locomotive

The 220 network continues to be the primary network for the Locomotive

Dual Path Wayside Communications

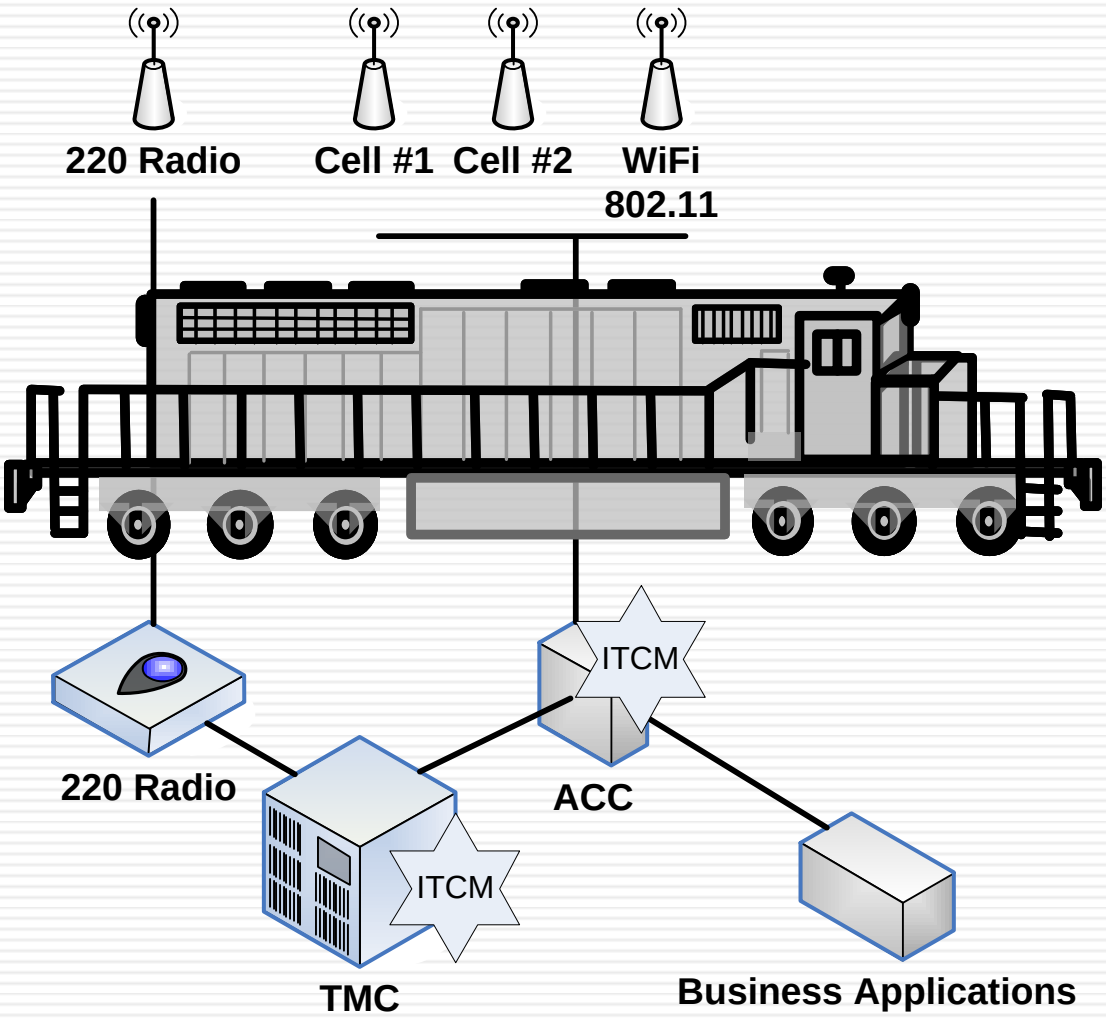


- **Considerations For Comms Selection**
  - **220 RF Engineering Approach**
  - **Feasibility for Local Extension**
  - **Leased Circuit availability, construction costs & lead time**
  - **Availability of Cell coverage**
  - **Availability of Satellite look angle**
- **Balancing Capital, OE, and Reliability**



Use of Dual Communication paths has proven reliability benefits at CSX

Locomotive Communications



TMC runs IETMS & ITCM

Auxiliary Card Cage (ACC) with Cell & WiFi Modems,

Backup ITCM (future)

ITC 220 MHz radio:

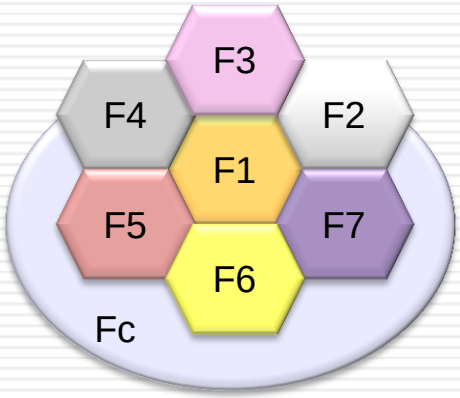
Antenna Bar: 2 per loco

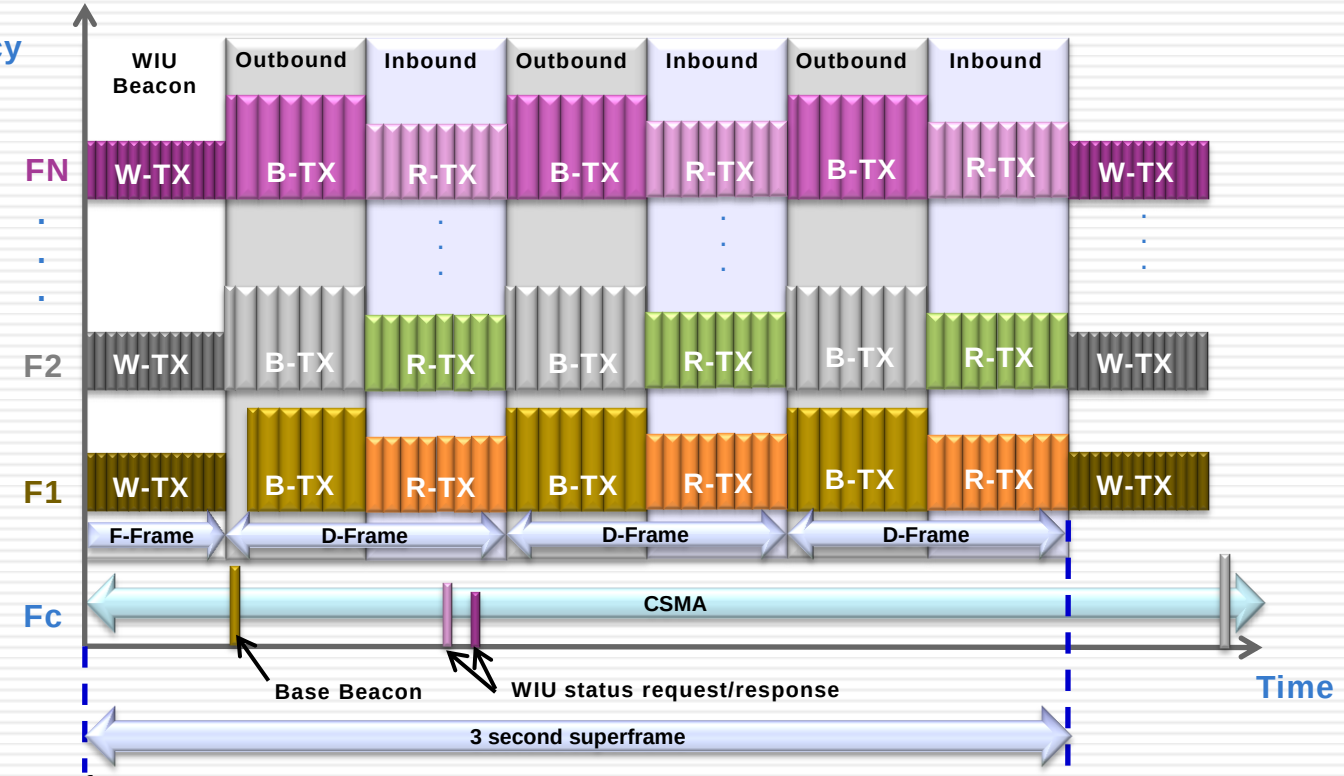
- **220 MHz antenna**
- **Cellular antenna (2)**
- **Wi-Fi antenna**

Consider : Asset Management, Installation Verification, and Software Configuration Management processes & systems

220 Radio Architecture

ITC Net Link Layer





- 1 Common channel + N Local channels

- Local channel: 3-seconds superframe
  - F-Frame: WIU status beacons
  - D-Frame: outbound and inbound traffic from remotes under a base
- Common channel is accessed by CSMA. The common channel supports
  - Base beacon – for remote to select a base
  - WIU status request and response in ‘panic’ mode; WIU beacon on
- TX in F-Frame slots rely on GPS timing; TX in D-Frame slots rely on base polling
  - Base beacon is transmitted in both local and common channels

Questions?